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tion of special features from a large corps of well-known scientific men. The opening paper treats of the geographical distribution of the animal life of the West, as shown by Lieutenant Wheeler's explorations. This is followed by the account of the mammals observed, written by Dr. Elliott Coues and Dr. Yarrow, which goes extensively into the synonymy of the species mentioned, and gives copious notes upon habits, etc. Although the collections were large there were no novelties, and hence no plates accompany this paper. Chapter III., Ornithology, is by Mr. H. W. Henshaw, and is illustrated by fifteen plates of new species or varieties of birds. They are drawn by Robert Ridgway, and well drawn, but the chromo-lithographic process of coloring has failed to give a worthy effect in several cases, and some of the plates look cheap. The text of the Ornithology is full of news, and great praise belongs to Mr. Henshaw for his active and careful observance of the manners and songs of the little-known birds of the Southwest. This is the most entertaining and the longest chapter in the volume. Dr. Yarrow himself writes the report upon the Batrachians and Reptiles, of which a large series of great value was secured, and unites with Prof. E. D. Cope in describing the fishes, which have been somewhat neglected by Western expeditions heretofore. Both of these papers are accompanied by many finely engraved plates, partially colored; and both are preceded by a discussion of general characteristics. The collections of Hymenoptera are reported upon by E. T. Cresson and Edward Norton; the Diurnal Lepidoptera, by Theodore L. Mead and W. H. Edwards; new species of *Zygænidæ* and *Bombycidæ*, by Richard H. Stretch; the Diptera, by Baron Osten-Sacken; the Coleoptera, by Henry Ulke; the Hemiptera, by Professor Uhler; the Orthoptera, by Professor Thomas; and the Neuroptera, by Dr. Hagen. Dr. Yarrow, with quite unnecessary apologies as to unfitness, presents the report upon the Mollusks, showing that even the more barren plains of New Mexico and Utah support many species of terrestrial and fluviatile mollusks, as well as the mountain meadows of the more Northern Territories; and extending almost or quite across the continent, the range of some of our common Eastern species. The final chapter is by Professor Verrill upon fresh-water leeches. This last half of the book, also, is adorned with a large number of plates finely drawn and exquisitely colored.

WEISMANN'S FINAL CAUSES OF TRANSMUTATION.¹ — Perhaps the most remarkable biological work of the year is Prof. August Weismann's treatise on the Final Causes of Transmutation, forming the second part of his Studies on the Theory of Descent. The first part of the work, entitled Seasonal Dimorphism, appeared in 1875. The present work is divided into four divisions, of which the first presents a striking array of

¹ *Studien zur Descendenz-Theorie. II. Ueber die letzten Ursachen der Transmutationen.* Von Prof. AUGUST WEISMANN. Mit fünf Farbendrucktafeln. Leipzig. 1876. 8vo, pp. 336.

facts on the origin of the markings of caterpillars. The author describes the nature and morphology of the markings of larvæ of the family Sphingidæ, their biological value and tribal development, concluding that the oldest Sphingid caterpillars were without markings; that the oldest style of markings were longitudinal lines, the later ones oblique streaks, and the last to be developed, the spots. This part of the subject is illustrated by five colored plates. In the third section the transformation of the Mexican axolotl into an Amblystoma is discussed at considerable length, and with characteristic thoroughness. Professor Weismann believes that the Siredon or axolotl was originally derived from a land salamander (Amblystoma), but has reverted to an axolotl, or larval form, through the change of the climate of Mexico from a damp to an exceedingly dry one, obliging these animals, which as larvæ, lived in ponds, and as adults lived under fallen trees and stones or in damp places, to revert to the original larval Siredon form and remain permanently amphibious. In the fourth division, on the mechanical conception of nature, the author maintains that development is mechanical, and that we must reject the idea of a special life-force. Still he as strongly believes in teleology, and maintains the thesis that evolutionary views do not tend to materialism.

GLOVER'S ILLUSTRATIONS OF INSECTS.¹ — This is a large quarto volume, containing ten excellent copper-plates illustrating the leading types of plant-bugs (Hemiptera not including the Homoptera), with 132 pages of text, a fac-simile of the author's own handwriting, printed on prepared lithographic paper. The letterpress contains useful lists of predaceous or parasitic bugs (Heteroptera), of the vegetable or animal substances destroyed by them, and of remedies against their attacks used or suggested by various writers. The value of the work is greatly increased by the aid of Mr. P. R. Uhler, "who has materially assisted in preparing the work by furnishing the specimens from which to figure, for advice and correcting the text, for the classification and valuable notes." The edition consists of but fifty or sixty copies for private distribution, and is a storehouse of useful information for agriculturists, which we wish could be more widely published.

LOVÉN'S STUDIES ON THE ECHINOIDS.² — This elaborate memoir presents matter of special interest to the palæontologist as well as to the zoölogist and anatomist. Chiefly zoölogical in its character, the text and plates are mostly devoted to a discussion of the homologies of the shell of the sea-urchins, particularly those forms related to extinct genera of echinoids. Comparisons are also instituted with the classes of

¹ *Manuscript Notes from my Journal, or Illustrations of Insects, Native and Foreign. Order Hemiptera, Suborder Heteroptera, or Plant-Bugs.* By TOWNSEND GLOVER. Washington, D. C. 1876. 4to, pp. 132.

² *Études sur les Échinoidés.* Par S. LOVÉN. (Kongl Svenska Vetenskaps-Academiens Handlingar. Bandet II., No. 7.) Text and Atlas of 53 Plates. Stockholm. 1875. 4to, pp. 91.